



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art: 3679  
Examiner: Aaron M. Dunwoody  
Applicants: Loughrin et al  
Serial No.: 09/943,685  
Filed: August 30, 2001  
For: **DRIVE SHAFT COUPLING**

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**AMENDED  
APPEAL BRIEF**

Mail Stop Appeal Brief – Patents  
Director of the U.S. Patent and Trademark Office  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Dear Sir:

This is an appeal from the September 2, 2004 final rejection of Claims 1-11 of the above-identified application. No claims have been allowed. A copy of the Examiner's Final Office Action dated September 2, 2004 is attached as Exhibit A.

Claims 1-11 are rejected under 35 U.S.C. Section 103(a) as being unpatentable over Walters et al. in view of Ferguson. No claims have been cancelled. The claims on appeal are Claims 1-11 and are reproduced in Exhibit B.

The references cited by the Examiner, specifically Walters et al. and Ferguson et al. are attached as Exhibit C.

**REAL PARTY IN INTEREST**

GKN Walterscheid GmbH is the real party in interest, being the assignee of the present application.

## **RELATED APPEALS AND INTERFERENCES**

To the best of Applicants' knowledge, no other appeals or interferences are pending which will directly affect or be directly affected by or have a bearing on the Board's decision in the present pending appeal.

## **STATUS OF THE CLAIMS**

Claims 1-11 stand finally rejected (attached as Exhibit B).

## **STATUS OF THE AMENDMENTS**

The claims were amended November 30, 2004. The claims were not entered by the Examiner in his Advisory Action dated December 22, 2004 (attached as Exhibit D). The claims are reproduced in Exhibit B.

## **SUMMARY OF THE INVENTION**

The invention relates to a drive shaft assembly (1) for interconnecting a driving component of an agricultural machine in a driven component of an agricultural implement. The drive shaft assembly (1) includes a first shaft (16) and a second shaft (17). ¶22, page 6, lines 9-10. The second shaft (17) engages the first shaft 16 to enable torque transmission and relative axial sliding motion. ¶22, page 6, lines 14-17. See Figure 1. A joint component (6) of a universal joint (2) interconnects one of the first and second shafts (16) and (17) to the agricultural driving and driven component. ¶22, page 6, lines 10-11. The joint component is both rotatable through a specific range of free rotation, ¶25, page 7, lines 14-21, (see Figure 3) and is fixed from axial movement relative to one of the second shafts ¶26, page 8, lines 1-2 (see Figure 2). The second shaft is attached to the agricultural driving component of the agricultural machine or the

agricultural driven component of agricultural implement. A copy of the application is attached as Exhibit E.

### **GROUND OF REJECTION**

Whether or not claims 1-11 are obvious under 35 U.S.C. §103(a) over Walters et al. in view of Ferguson.

### **ARGUMENT**

### **BACKGROUND OF THE INVENTION**

The present invention relates to a drive shaft coupling for interconnecting a driving component and a driven component in agricultural machinery.

In many instances, a driving component is required to be operatively connected with a driven component for driving communication. Further, the interconnection must enable a degree of relative motion between the driving and driven components. For example, in many agricultural operations, a tractor is used to tow a secondary agricultural implement. Also, the tractor operatively drives the second agricultural implement. To achieve this, the tractor typically includes an output shaft (driving component) operatively interconnected to an input shaft (driven component) of the secondary agricultural implement. The interconnection is typically achieved by a drive shaft disposed between the two components.

In almost all instances, the tractors are used for a variety of tasks. Accordingly, various types of secondary agricultural implements must be readily engageable with the tractor. Thus, connection and disconnection of the drive shaft assembly is required. Often, the output shaft of the tractor and the input shaft of the secondary agricultural implement are not sufficiently aligned and thus prohibit quick interconnection.

Thus, the present invention relates to a drive shaft coupling that includes a range of rotational motion, or free motion, to enable interconnection between the input and output shafts when they are not of exact rotational alignment. The drive shaft assembly includes a first shaft and a second shaft engaging the first shaft to enable torque transmission and relative axial sliding motion. A joint component of a universal joint operatively interconnects one of the first and second shafts to one of the agricultural driving or driven components. The joint component is both rotatable through a specified range of free motion rotation and is fixed from axial movement relative to one of the second shafts, the agricultural driving component of the agricultural machine or the agricultural driven component of the agricultural implement. The combination of Walters et al. in view of Ferguson fails to render the invention obvious to those skilled in the art.

It is respectfully submitted that the Examiner is misapplying the references.

The Walters' reference is directed towards a swivel hitch. Walters discloses and claims the swivel hitch construction easily adapted to connect with a pair of draft links or drawbar of a towing tractor. Walters, in passing, in one sentence of the disclosure (column 2, line 47-49 Appendix C) mentions that it may utilize a telescoping shaft. No where, does Walters disclose or suggest a reason or a purpose for the telescoping shaft. The entire Walters' reference discloses and claims a swivel hitch.

The Examiner next combines Walters et al. with Ferguson. The Ferguson reference discloses a driveshaft coupling which uses an elastomeric damper. The coupling is rotated against the elastomeric damper. The elastomeric damper always provides a reactive force to return and to maintain the coupling in a first position. Ferguson fails to disclose or suggest any free motion in the coupling. In fact, due to the elastomeric material, which fills the gap in the coupling, no free motion can or does occur in the Ferguson device.

As claimed, applicant's invention includes free motion to enable the connection of drive components between various implements. The Examiner's combination of references, specifically Walters et al. in view of Ferguson, fail to shed any light on the problem solved by applicant's invention. Further, this combination fails to disclose or suggest applicant's invention.

The court in re Fritch, 23USPQ2d 1780 (Fed. Cir. 1992) stated that:

"Obviousness cannot be established by combining the teaching of prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. Under §103, teachings of references can be combined *only* if there is some suggestion or incentives to do so. Although couched in terms of combining teachings found in the prior art, the same inquiry must be carried out in the context of a purported obvious "modification" of the prior art. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggests the desirability of the modification." At 1783 emphasis original.

Here, there is no motivation or suggestion of the desirability to combine Walters et al. and Ferguson. In fact, the Ferguson reference fails to teach any type of free motion. The Walters et al. reference teaches a swivel hitch adaptable for use with either a tractor drawbar or two-point hitch. Walters et al swivel hitch has no use for teachings of the Ferguson reference.

The Examiner is relying upon hindsight to arrive at the determination of obviousness.

"It is impermissible to use the claimed invention as an instruction manual or template to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated "one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." In re Fritch, *supra*, 1784.

This is exactly what the Examiner has done in applying his §103 rejection. The Examiner has taken one small piece from the Walters' et al. reference and patched it together with the Ferguson reference. The heart of the Walters et al invention has nothing to do with Applicants' invention. The Ferguson reference fails to teach free motion. It is clear that the Examiner cannot use his hindsight reconstruction in an attempt to render applicant's invention obvious. There is

no motivation or suggestion to combine the two references as suggested by the Examiner. In fact, neither reference discloses or suggests the claimed free motion of applicant's invention.

Accordingly, applicant believes the claims be patentably distinguishable over the art decided by the Examiner.

### **CONCLUSION**

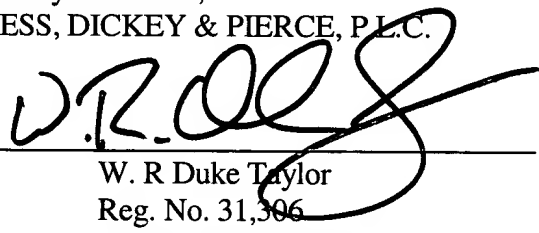
Applicant respectfully submit that the Examiner has failed to show that the present invention would be obvious over Walters et al. in view of Ferguson. Further, neither reference discloses the free motion claimed by applicant.

Accordingly, reversal of the final rejection of claims 1-11 and allowance of the claims is respectfully submitted.

Respectfully submitted,  
HARNES, DICKEY & PIERCE, P.L.C.

Dated: August 2, 2005

By: \_\_\_\_\_

  
W. R Duke Taylor  
Reg. No. 31,306  
Attorney for Applicants

P.O. Box 828  
Bloomfield Hills, MI 48303  
(248) 641-1600

Attorney Docket No. 6039-000293

Enclosures



## **CLAIMS ON APPEAL**

1. A drive shaft assembly for interconnecting a driving component of an agricultural machine and a driven component of an agricultural implement, comprising:

a first shaft;

a second shaft engaging said first shaft for enabling torque transmission without relative rotational movement and enabling relative axial sliding motion therebetween; and

a joint component of a universal joint operably interconnecting one of said first and second shafts to one of the agricultural driving and driven components, said joint component is both rotatable through a specified range of free-motion rotation without torque transmission and is fixed from axial movement relative to one of said second shaft, the agricultural driving component of the agricultural machine and the agricultural driven component of the agricultural implement.

2. The drive shaft assembly of claim 1, wherein said joint component includes axial grooves and said second shaft includes an end portion having radially extending axial teeth for engaging said grooves and thereby enabling said specified range of relative rotation.

3. The drive shaft assembly of claim 2, wherein said grooves are formed within a bore of said joint component and said teeth extend outward from said end portion, whereby said end portion is received into said bore for enabling engagement between said teeth and said grooves.

4. The drive shaft assembly of claim 2, wherein said grooves are formed in an outer circumferential surface of said joint component and said teeth extend radially inward from said end portion, whereby said joint component is partially received into said end portion for enabling engagement between said teeth and said grooves.

5. The drive shaft assembly of claim 2, further comprising a ring engaged with a ring groove of one of said joint component and said second shaft for fixing said joint component and said second shaft from relative axial motion therebetween.

6. The drive shaft assembly of claim 1, wherein said joint component includes axial grooves and one of the driving and driven components includes radially extending axial teeth for engaging said grooves and thereby enabling said specified range of relative rotation.



7. The drive shaft assembly of claim 6, wherein said grooves are formed within a bore of said joint component and said teeth extend radially outward from one of the driven and driving components, whereby one of said driven and driving components is received into said bore for enabling engagement between said teeth and said grooves.

8. The drive shaft assembly of claim 6, wherein said grooves are formed along a stub end of said joint component and said teeth extend radially inward within a bore of one of the driven and driving components, whereby said stub end is partially received into said bore for enabling engagement between said teeth and said grooves.

9. The drive shaft assembly of claim 6, further comprising a ring engaged with a groove of one of said joint component, the driven component and the driving component for fixing said joint component and one of the driven component and driving component from relative axial movement therebetween.

10. The drive shaft assembly of claim 1, wherein said joint component is a universal joint yoke.

11. The drive shaft assembly of claim 1, wherein said second shaft includes a stub end interconnected thereto for operably interconnecting said joint component and said second shaft.